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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/576,783

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Makoto Katayama

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EXAMINER

BAYOU, AMENE SETEGNE

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,783	Applicant(s) KATAYAMA ET AL.	
	Examiner AMENE S. BAYOU	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 4 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 6 and 8-10 are ejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. In re claim 6, it recites "having a semi circular shape". It can not be ascertained if both or one of the first and second grooves have a semi circular shape.
4. In re claims 8 and 10 both recite "the through hole". There is no antecedent basis for the limitation.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3,6-10 are rejected under 35 U.S.C 102(b) as being unpatentable over Katayama (Japanese patent publication number 2003065236) in view of Strikis et al (6431053) or Nakada (5839351).
7. In re claim 1 ,6-8 Katayama discloses a compression system including:

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- A hermetic compressor ,in figure 1, storing oil in a hermetic container and accommodating a compression mechanism for compressing refrigerant gas, wherein the compression mechanism comprises: a crank shaft disposed in vertical direction, and having a main shaft (9) and an eccentric shaft (10) ,a block forming a cylinder ,a piston (23a) making a reciprocating motion in the cylinder (13) , and having a top surface and a skirt surface, both vertical to a direction of the reciprocating motion, a connecting rod (11) for coupling the eccentric shaft (10) and the piston (23), and an oil supply system (7c) for supplying the oil to an outer circumference of the piston (see abstract),grooves (23e) are provided at an upper side and a lower side of the outer circumference of the piston, and of an outer shape of the grooves, the outer shape of the grooves communicating with a space in the hermetic container at least when the piston is in a bottom dead center is a shape not forming a parallel line to an axial center of the piston when the grooves are developed in a plane (clearly shown in figure 5 and discussed in abstract),wherein a through-hole is disposed at about the center of the grooves (figure 5). Katayama ,however fails to disclose the following limitation which is taught by discloses the claimed invention except the following limitation which is taught by Strikis et al or Nakada:

Strikis et al teach:

- The outer shape of the grooves (82,84) is a semicircular shape extending toward a skirt side of the piston (clearly taught in column 5,lines 1-19) ,

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and the semicircular shape includes a first outer shape extending toward the skirt side of the piston, a second outer shape parallel to the top surface of the piston , and a third outer shape linking the first outer shape and the second outer shape, and a curvature of the first outer shape is smaller than that of the third outer shape (clearly shown in figure 6 and 7),and the groove enclosed by the first outer shape communicates at least with the space in the hermetic container when the piston is in the bottom dead center ,wherein the outer shape of the groove including the first outer shape, the second outer shape, and the third outer shape is a curved shape to be gradually increased in sliding width toward the skirt direction of the piston.

Nakada also teaches:

- The outer shape of the grooves (5) is a semicircular shape extending toward a skirt side of the piston (shown in figure 1) , and the semicircular shape includes a first outer shape extending toward the skirt side of the piston, a second outer shape parallel to the top surface of the piston , and a third outer shape linking the first outer shape and the second outer shape, and a curvature of the first outer shape is smaller than that of the third outer shape (clearly shown in figure 1),and the groove enclosed by the first outer shape communicates at least with the space in the hermetic container when the piston is in the bottom dead center wherein the outer shape of the groove including the first outer shape, the second outer

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shape, and the third outer shape is a curved shape to be gradually increased in sliding width toward the skirt direction of the piston.

8. It would have been obvious to one skilled in the art at the time the invention was made to modify the piston grooves of Katayama by making the in a semicircular fashion as taught by Strikis or Nakada in order to easily distribute the oil so that an optimum area of the piston is covered.

9. In re claim 2 Katayama in view of Strikis or Nakada as applied to claim 1 discloses the claimed invention:

Katayama discloses:

- All of the outer shape of the grooves (23e) are shapes not forming the parallel line to the axial center of the piston when the grooves are developed in a plane, in figure 5.

10. In re claim 3 Katayama in view of Strikis or Nakada as applied to claim 1 disclosed the claimed invention except mentioning that what the depth of the oil groove is. It would have been obvious to one skilled in the art at the time the invention was made to choose the proper dimension of the grooves since such choice merely depends on the size of the compressor ,the degree of lubrication required and the flow rate of the lubricant that the designer chooses.

11. In re claim 6,9-10 Katayama in view of Strikis et al or Nakada discloses the claimed invention:

Katayama discloses:

- A hermetic compressor ,in figure 1,storing oil in a hermetic container and accommodating a compression mechanism for compressing refrigerant

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gas, wherein the compression mechanism comprises: a crank shaft disposed in vertical direction, and having a main shaft (9) and an eccentric shaft (10), a block forming a cylinder, a piston (23a) making a reciprocating motion in the cylinder (13), and having a top surface and a skirt surface, both vertical to a direction of the reciprocating motion, a connecting rod (11) for coupling the eccentric shaft (10) and the piston (23), and an oil supply system (7c) for supplying the oil to an outer circumference of the piston (see abstract), grooves (23e) are provided at an upper side and a lower side of the outer circumference of the piston 10, wherein a through-hole is disposed at about the center of the grooves (figure 5).

Strikis et al teach:

- The grooves (82,84) include a first groove portion extending toward a skirt side of the piston having a semicircular shape (clearly taught in column 5, lines 1-19), and a second groove portion extending toward the top side of the piston (1) and the outer shape of the first groove portion is curved and the first groove portion communicates with a space in the hermetic container (of Katayama) at least when the piston is in a bottom dead center position, and a third outer shape linking the first outer shape and the second outer shape, and a curvature of the first outer shape is smaller than that of the third outer shape (clearly shown in figure 6 and 7) wherein the outer shape of the first groove portion is a curved shape to

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be gradually increased in sliding width toward the skirt direction of the piston.

Nakada teaches:

- The grooves (5) include a first groove portion extending toward a skirt side of the piston (shown in figure 1) having a semicircular shape, and a second groove portion extending toward the top side of the piston (1) and the outer shape of the first groove portion is curved and the first groove portion communicates with a space in the hermetic container (of Katayama) at least when the piston is in a bottom dead center piston, in figure 5 , and a third outer shape linking the first outer shape and the second outer shape, and a curvature of the first outer shape is smaller than that of the third outer shape (clearly shown in figure 1) wherein the outer shape of the first groove portion is a curved shape to be gradually increased in sliding width toward the skirt direction of the piston.

12. Claim 5 is rejected under 35 U.S.C 103(a) as being unpatentable over Katayama view of Strikis et al as applied to claim 1 further in view of Irino (5092747).

13. In re claim 5 Katayama discloses the claimed invention except mentioning that the refrigerant is a hydrocarbon type. But Irino in paragraph 1, lines 32-34 teaches that hydrocarbon refrigerants are widely used in refrigerant compressor. It would have been obvious to one skilled in the art at the time the invention was made to choose a CFC-12 or other hydrocarbon as refrigerant since it is one of the most commonly used refrigerant in the field.

Response to Arguments

14. Applicant's arguments filed 11/03/09 have been fully considered but they are not persuasive.

15. In re claim 1 and 6 applicant amended both and argued that Katayama does not teach semicircular groove. Examiner also admitted that Katayama lacks such a teaching but used secondary reference of Nakada who teaches a semicircular groove as shown in figure 5.

Conclusion

16. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amene S. Bayou whose telephone number is

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571-270-3214. The examiner can normally be reached on miff attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
Unit 3746